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THE PLANT DISEASE REPORTER

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PLANT DISEASE EPIDEMICS
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IDENTIFICATION SECTION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

A FOREST DISEASE SURVEY OF ALASKA

Supplement 247 September 15, 1957

The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Plant Disease Epidemics and Identification Section serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

THE PLANT DISEASE REPORTER

PLANT DISEASE EPIDEMICS AND IDENTIFICATION SECTION

Crops Protection Research Branch — Plant Industry Station, Beltsville, Maryland

A FOREST DISEASE SURVEY OF ALASKA

James W. Kimmey[1] and John A. Stevenson[2]

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September 15, 1957

In the summers of 1952 through 1954 an extensive forest disease survey was made throughout Alaska, and 250 fungus collections were made. The purpose of the survey was primarily to observe the general health of the native forest trees and to determine whether any epidemic disease conditions existed there. Much of the survey was by observations from the air, although brief observations were frequently made on the ground. As a part of the survey, the cull in commercially important forest trees was studied in Southeast Alaska[3].

This report is a brief summary of the general disease conditions found and a listing of the fungi collected during the survey.

GENERAL DISEASE CONDITIONS

No foreign or introduced diseases were found in the survey. No epidemic disease condition was found, but some of the native diseases were abundant and widespread.

Dwarfmistletoe, Arceuthobium campylopodum forma tsugensis, is abundant on western hemlock in Alaska. In dense young sapling stands the more heavily infected trees are so stunted that they are soon suppressed by their more vigorous neighbors. In old-growth hemlock stands the more heavily infected trees are so weakened that they eventually succumb to the infections, or they become easy prey for other disease-producing agents and insects.

The rust fungus Peridermium coloradense commonly causes large witches'-brooms in both white and black spruce throughout the range of these spruces in Alaska. The growth of infected trees is retarded, and many treetops and occasionally entire trees are killed by the disease.

General observations of conks and other indicators of cull give the impression that cull in Southeast Alaska forests becomes greater toward the northern limits of each tree's range. Detailed study of cull in Sitka spruce, western hemlock, and western redcedar substantiated these observations.

Fomes pinicola, which occurs almost entirely as a scavenger fungus on dead host plants in Oregon and Washington, is the principal cause of heartrot in living Sitka spruce and causes most of the brown rot in western hemlock in Alaska. One of the principal means of entrance for this fungus is through frost cracks in the bole of the trees. The prevalence of frost cracks increases in both spruce and hemlock toward the northern limits of their ranges. Also, the amount of cull caused by shake, which is often associated with frost cracks, becomes progressively greater toward the North.

Fomes pini, which causes the most common heartrot in Sitka spruce and western hemlock in the Pacific Northwest States and British Columbia, accounts for only 9 percent of the total cull in Sitka spruce and 1 percent of the total cull in western hemlock in Alaska[3]. The cull resulting from this fungus becomes less and less prevalent toward the northern and western limits of the ranges of these two host trees. However, at these limits F. pini is abundant in associated mountain hemlock and white spruce. Here mountain hemlock occurs at sea level and does not extend appreciably farther north. In contrast, white spruce extends much farther north, where *F. pini* remains as one of the more common fungi, if not the principal fungus, causing heartrot of the main bole.

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[3] Kimmey, James W. 1956. Cull factors for Sitka spruce, western hemlock, and western redcedar in Southeast Alaska. Alaska Forest Research Center, Station Paper No. 6. 31 pp., 24 illus.

Most white spruce stands are relatively young because of repeated forest fires in the Interior, and the percentage of cull is not great. Nevertheless, considerable loss occurs through windthrow of trees weakened by the common butt and root rot from the fungus *Coniophora puteana.* White spruce trees injured by fire are readily infected by *Stereum sanguinolentum,* which enters through dead areas on the tree boles, and windthrown trees soon deteriorate from the action of *Fomes pinicola*, *Trametes heteromorpha*, and other fungi.

In spite of the many large fires in the Interior, some stands of the short-lived birch reach an age when they are highly defective. The most common heartrot of birch, aspen, and willow is caused by *Fomes igniarius*. As the old birch stands break up, a large number of fungi cause decay of dead and down trees. One of the more conspicuous fungi found on dead birch is *Polyporus betulinus*.

FUNGI COLLECTED

During the course of the Alaska survey, specimens of forest fungi were collected at every opportunity. They were placed in a forest-fungus collection at the Forest Research Center at Juneau. Duplicate specimens were sent to Beltsville, Maryland, to be added to the National Fungus Collections there.

There follow lists for each of the various forest host plants showing each fungus collected, the nature of the decay or diseases it causes, and its general prevalence as determined from the survey. A supplementary list of fungi found growing on humus and soil and on plants other than trees is appended. Determinations of Thelephoraceae were made by Paul L. Lentz and of *Poria* by Dow V. Baxter.

ALNUS RUBRA Bong. -- RED ALDER

Fomes applanatus (Pers. ex S. F. Gray) Gill.
Causes a white rot of dead trees. Uncommon.

Kuehneomyces mutabilis (Fr.) Singer & A. H. Sm.
Causes a white rot of slash. Uncommon.

Polyporus versicolor L. ex Fr.
Causes a white spongy rot of dead wood. Common.

ALNUS SINUATA (Reg.) Rydb. -- SITKA ALDER

Hypoxylon fragiforme (Pers. ex Fr.) Petr.
Causes a white rot of dead stems. Common.

Peniophora sheari Burt
Causes a white rot of dead stems and branches. Common.

Polyporus albellus Pk.
Causes decay of dead stems. Only specimen found on Sitka alder.

Stereum gausapatum Fr.
Causes a white rot of dead stems. Common.

Stereum purpureum (Pers. ex Fr.) Fr.
Causes a white rot of dead stems. Common.

ALNUS TENUIFOLIA Nutt. -- THINLEAF ALDER

Fomes igniarius (L. ex Fr.) Kickx
Causes a white rot of the heartwood of living trees. Common.

Hericium laciniatum Leers ex Banker
Causes a white rot of logs. Uncommon.

Hymenochaete tabacina Lév.
Causes a white rot of dead trees. Uncommon.

Polyporus radiatus Sow. ex Fr.
Causes a white rot in old logs. Common.

Steccherinum ochraceum (Fr.) S. F. Gray
Causes white rot of sapwood in dead, down trees. Uncommon.

Stereum hirsutum (Willd. ex Fr.) S. F. Gray
Causes white rot of sapwood of dead trees and slash. Uncommon on thinleaf alder.

Stereum purpureum (Pers. ex Fr.) Fr.
Causes decay of logs. Uncommon on this host.

Trametes mollis (Sommerf.) Fr.
Causes white rot of sapwood in dead down trees. Uncommon.

BETULA GLANDULOSA Michx. -- RESIN BIRCH
Melampsoridium betulinum (Pers.) Kleb.
Causes rust on leaves of living plants. Found at only one location.

BETULA PAPYRIFERA Marsh. -- PAPER BIRCH
Daedalea unicolor Bull. ex Fr.
White rot of sapwood in dead trees and slash. Abundant.

Daldinia occidentalis Child
White rot of outer sapwood in fire-killed trees. Common in burns.

Fomes applanatus (Pers. ex S. F. Gray) Gill.
White rot in sapwood and heartwood of logs and stumps. Common.

Fomes fomentarium (L. ex Fr.) Kickx
White rot in heartwood of living trees, and both sapwood and heartwood of dead trees.

Common on dead trees. Uncommon in heartwood and rare in sapwood of living trees.

Fomes igniarius (L. ex Fr.) Kickx
White rot of heartwood. Principal decay of living birch in Alaska. Abundant.

Hericium laciniatum Leers ex Banker
White rot in wood of down dead trees. Uncommon.

Lenzites betulina L. ex Fr.
Causes a white rot in dead trees. Occasional.

Panus rudis Fr.
Causes decay of dead wood. Uncommon.

Pholiota squarrosoides Pk.
White rot of heartwood in living trees, and of sapwood and heartwood of dead and down trees. Uncommon.

Pleurotus ostreatus Fr.
White rot of heartwood in living trees. Uncommon.

Polyporus albellus Pk.
Causes a white rot of old logs, and slash. Uncommon.

Polyporus betulinus Bull. ex Fr.
Brown rot of dead sapwood. Abundant throughout the birch range in Alaska.

Polyporus dichrous Fr.
White rot in stump. Rare.

Polyporus hirsutus Wulf. ex Fr.
Causes a white rot of dead sapwood. Uncommon on this host.

Polyporus pargamenus Fr.
White rot in sapwood of logs. Rare on paper birch.

Polyporus resinosus Schrad. ex Fr.
Causes a white rot of heartwood in living trees.
Sporophores rare.

Polyporus versicolor L. ex Fr.
White rot of sapwood in dead down tree. Found at only one locaction.

Stereum hirsutum (Willd. ex Fr.) S. F. Gray
White rot of logs and slash. Common.

Stereum purpureum (Pers. ex Fr.) Fr.
White rot of sapwood in logs and slash. Common.

Trogia crispa Pers. ex Fr.
Causes a white rot of sapwood in logs. Occasional.

LARIX LARICINA (Du Roi) K. Koch -- TAMARACK

Durella sp.
Found on drouth-killed branches and tops as a secondary organism. Occasional.

Lenzites saepiaria Wulf. ex Fr.
Brown rot in sapwood and heartwood of dead standing trees. Common.

Polyporus abietinus Dicks. ex Fr.
White rot of sapwood in dead trees and logs. Common.

Trametes tenuis Karst. (*Trametes setosus* Weir)
Causes a brown rot in old logs. Uncommon.

PICEA GLAUCA (Moench) Voss -- WHITE SPRUCE

Chrysomyxa ledicola (Pk.) Lagh.
Causes a cast of current year's needles of living trees. At times causes serious retardation of growth, and occasionally kills small trees.
Widespread, and abundant in some areas.

Chrysomyxa pyrolae (DC.) Rostr.
A rust of new cones. Infected cones develop no seed. Occasional.

Coniophora puteana Schum. ex Fr.
Causes a brown cubical butt rot of living trees. Economically important because of extensive losses of mature trees through windthrow.
Common.

Fomes pini (Thore ex Fr.) Karst.
A white rot of heartwood in living trees. Probably the principal cause of volume loss through decay in white spruce.
Common.

Fomes pinicola (Sw. ex Fr.) Cke.
Produces a brown rot of sapwood and heartwood of dead trees and logs. Common.

Fomes roseus (Alb. & Schw. ex Fr.) Cke.
Causes a brown rot of heartwood in living and dead trees. Uncommon.

Lenzites saepiaria Wulf. ex Fr.
Produces a brown cubical rot of sapwood and heartwood of dead trees and slash. Most prevalent in drier locations.
Common.

Lophodermium filiforme Darker
Causes a cast of previous year's needles from living trees. Common.

Peridermium coloradense (Diet.) Arth. & Kern
A rust of needles and branchlets on living trees. Produces witches'-brooms, kills treetops, and occasionally entire trees.
Common to abundant throughout range of white spruce in Alaska.

Polyporus abietinus Dicks. ex Fr.
White rot of dead sapwood. Usually on logs and slash. Common.

Polyporus fibrillosus Karst.
Causes a brown rot of logs and dead down trees. Uncommon.

Polyporus pargamenus Fr.
Produces a white rot of sapwood in dead and down trees. Common on drier sites.

Polyporus tomentosus Fr.
Decays dead roots of stumps or snags. Rare.

Poria crustulina Bres.
White rot of dead sapwood. Rare.

Stereum sanguinolentum Fr.
Causes a white rot of dead sapwood on living or dead trees. Common.

Trametes heteromorpha (Fr.) Bres.
A brown rot of sapwood in down timber and slash. Common.

Trametes serialis Fr.
Causes a brown rot of heartwood in old logs on the ground.
Rot common, sporophores uncommon.

PICEA MARIANA (Mill.) B. S. P. -- BLACK SPRUCE

Chrysomyxa ledicola (Pk.) Lagh.
Causes cast of current year's needles from living trees. Retards tree growth but rarely kills trees.
Abundant.

Chrysomyxa pyrolae (DC.) Rostr.
A rust on new cones on living trees. Prevents seed development in affected cones.
Uncommon.

Lophodermium filiforme Darker
Causes cast of previous year's needles. Common.

Peridermium coloradense (Diet.) Arth. & Kern

Rust of needles and branchlets. Produces large witches'-brooms, kills treetops, and occasionally entire tree.

Common to abundant throughout the host range of black spruce in Alaska.

PICEA SITCHENSIS (Bong.) Carr. -- SITKA SPRUCE

Chrysomyxa ledicola (Pk.) Lagh.

Causes cast of current year's needles. Retards tree growth, and rarely kills small trees.

Abundant some years, common other years.

Chrysomyxa pyrolae (DC.) Rostr.

A rust on new cones. Prevents seed development. Uncommon.

Fomes applanatus (Pers. ex S. F. Gray) Gill.

Produces a white spongy rot of both sapwood and heartwood in down timber and old logs in moist places.

Uncommon on this host.

Fomes nigrolimitatus (Rom.) Egelund

Causes a white rot of heartwood in living trees, and both heartwood and sapwood of dead down trees.

Uncommon.

Fomes pini (Thore ex Fr.) Karst.

Produces a white rot of heartwood in living trees. One of the most important decays of Sitka spruce.

Common in southern end of Southeast Alaska, becoming progressively less common northward. Rare in this host at northern limits of the tree's range.

Fomes pinicola (Sw. ex Fr.) Cke.

A brown rot of heartwood in living trees, and both sapwood and heartwood of dead trees and slash. The principal cause of decay of both living and dead Sitka spruce in Alaska.

Abundant.

Ganoderma oregonense Murr.

Causes a white spongy rot in old logs in wet places. Uncommon.

Lenzites saepiaria Wulf. ex Fr.

Produces a brown rot of sapwood and heartwood of logs and slash in dry situations. Common.

Lophodermium filiforme Darker

Kills needles of previous two years. Common.

Lophodermium piceae (Fckl.) Hoehn.

Kills needles of upper crown in large trees, and needles of previous year in small trees. At times causes serious defoliation.

Common.

Paxillus panuoides Fr.

Causes a brown rot of sapwood and heartwood at base of dead trees. Rare.

Polyporus abietinus Dicks. ex Fr.

Produces a white rot of sapwood in dead trees, logs, and slash; and also of dead sapwood in living trees.

Common on drier sites.

Polyporus borealis Fr.

Causes extensive heartrot in old-growth living trees. Common.

Polyporus fibrillosus Karst.
A brown rot of sapwood in old logs. Occasional.

Polyporus schweinitzii Fr.
Causes a brown rot of heartwood in butts and roots of living trees. One of the important heartwood decayers in Sitka spruce.
Common.

Polyporus serialis Fr. f. alaskanus Baxter
Produces a white rot in the sapwood of old snags. Uncommon.

Polyporus sulphureus Bull. ex Fr.
Brown rot of heartwood, principally in the lower bole, of living trees. One of the more important heartrots in Sitka spruce.
Common.

Poria albobrunnea (Romell) Baxter
Brown rot in dead branch stub of large living trees. No cull in tree bole.
One specimen found.

Poria sitchensis Baxter
Produces a brown rot of sapwood in old logs and stumps. Uncommon.

Stereum sanguinolentum Fr.
Causes a white rot of dead sapwood in living trees and less frequently in sapwood of dead trees and logs.
Abundant.

Trametes heteromorpha (Fr.) Bres.
Produces a brown rot of logs and slash, and occasionally of heartwood in dead branch stubs of live trees.
Common.

POPULUS BALSAMIFERA L. -- BALSAM POPLAR

Eichleriella spinulosa (Berk. & Curt.) Burt
Causes a white rot of logs and slash. Common.

Polyporus pargamenus Fr.
Produces a white rot of logs and slash. Uncommon.

Trametes suaveolens (L. ex Fr.) Fr.
Produces a white rot in dead and down trees. Uncommon.

POPULUS TREMULOIDES Michx. -- QUAKING ASPEN

Cryptochaete (Corticium) polygonia (Fr.) Karst.
Produces a superficial sapwood rot in small dead trees. Common.

Fomes applanatus (Pers. ex S. F. Gray) Gill.
Causes a stringy white rot of sapwood and heartwood of old logs in wet places. Common.

Fomes igniarius (L. ex Fr.) Kickx
Causes a white rot of heartwood in living trees. Most common heartrot in quaking aspen.
Common.

Fomes tenuis Karst.
Produces a white rot in old logs. Common.

Lenzites betulina (L. ex Fr.) Fr.
White rot of old stumps. Common.

Melampsora albertensis Arth.
A rust on leaves of live trees. This is the alternate host for a rust on conifers.
Occasional.

Pleurotus ostreatus Jacq. ex Fr.
Causes a white rot of sapwood and heartwood of both dead and living trees. Abundant in some locations.

Polyporus adustus Willd. ex Fr.
Causes a white rot in dead trees and slash. Uncommon.

Polyporus albellus Pk.
A white rot in old logs. Uncommon.

Polyporus hirsutus Wulf. ex Fr.
Produces a white rot of dead trees and slash. Uncommon.

Polyporus pargamenus Fr.
Causes a white rot in logs. Uncommon.

Polyporus pubescens Schum. ex Fr.
Produces a white rot in logs. Rare.

Polyporus zonatus Fr.
Causes a white rot of dead sapwood and heartwood. Common.

Stereum hirsutum (Willd. ex Fr.) S. F. Gray
Causes a white rot of old logs. Common.

Stereum rufum Fr.
Causes a superficial rot of small dead trees. Common.

Trametes suaveolens (L. ex Fr.) Fr.
Produces a white rot in logs. Uncommon.

POPULUS TRICHOCARPA Torr. & Gray -- BLACK COTTONWOOD

Fomes applanatus (Pers. ex S. F. Gray) Gill.
Produces a white spongy rot in logs in wet places. Common.

Hericium laciniatum Leers ex Banker
Causes a white rot of dead sapwood and heartwood. Rare.

Polyporus picipes Fr.
Causes a white rot of sapwood in old logs. Rare.

Polyporus versicolor L. ex Fr.
White rot of logs and slash. Uncommon.

Stereum purpureum (Pers. ex Fr.) Fr.
Decays sapwood of dead trees. Uncommon.

Trametes variiformis Pk.
Decays old logs. Rare on black cottonwood.

SALIX ALAXENSIS (Anderss.) Cov. -- FELTLEAF WILLOW

Daedalea confragosa Bolt. ex Fr.
Causes a white rot of sapwood in dead standing trees. Uncommon.

Fomes igniarius (L. ex Fr.) Kickx
Produces a white rot of the heartwood of living trees. Probably the most

prevalent rot in living trees.

Common.

Hymenochaete tabacina Lév.

Produces a white rot in dead trees, logs, and slash. Common.

Melampsora ribesii-purpureae Kleb.

A rust on the underside of leaves of living trees. At times causes some defoliation. The alternate host plants are *Ribes* spp.

Common.

SALIX BEBBIANA var. PERROSTRATA (Rydb.) Schneid. -- BEBB WILLOW

Uncinula salicis (Merat) Wint.

Produces mildew on leaves of living trees. Common.

SALIX FUSCESCENS Anderson

Melampsora ribesii-purpureae Kleb.

Rust on leaves of living trees. Common.

SALIX PADOPHYLLA Rydb. -- SERVICEBERRY WILLOW

Melampsora ribesii-purpureae Kleb.

Forms rust spots on leaves of living host plants. Common.

SALIX SCOULERIANA Barratt -- SCOULER WILLOW

Melampsora ribesii-purpureae Kleb.

Rust spots on underside of leaves of living trees.

SALIX SP. -- WILLOW

Melampsora biglowii Thuem.

A rust on the leaves of living willows. The alternate stage occurs on the leaves of tamarack trees.

Common.

Uncinula salicis (Merat) Wint.

A powdery mildew of leaves on living host plants. At times kills new shoots on young plants.

Common.

THUJA PLICATA Donn -- WESTERN REDCEDAR

Polyporus cuneatus (Murr.) Zeller

Causes a white rot of sapwood in logs and windfalls with bark on. Found only in wet locations.

Uncommon.

Poria ferrugineofusca Karst.

Causes extensive white rot in the heartwood of living trees.

Rot abundant, sporophores rare.

TSUGA HETEROPHYLLA (Raf.) Sarg. -- WESTERN HEMLOCK

Fomes annosus (Fr.) Cke.

Causes a white rot and hollows in the heartwood of living trees. One of the more common heartrots of western hemlock, and the most common rot originating in old logging wounds.

Rot common. Sporophores rare.

Fomes applanatus (Pers. ex S. F. Gray) Gill.

Causes a white rot of the heartwood and sapwood of old logs and occasionally heartrot of living trees. Common.

Fomes pini (Thore ex Fr.) Karst.

Produces a white rot in the heartwood of living trees. One of the more common heartrots in western hemlock in the southern end of Southeast Alaska, becoming less common farther north.

Common.

Fomes pinicola (Sw. ex Fr.) Cke.

A brown rot of heartwood in living trees, and heartwood and sapwood of dead trees and logs. Causes about 60 percent of the cull from brown rots in western hemlock in Alaska.

Abundant.

Fomes robustus Karst.

Causes a white rot in sapwood and heartwood of living trees. Kills the cambium in decayed areas, and occasionally entire trees. A common cause of wind-breakage in living trees.

Common.

Lenzites saepiaria Wulf. ex Fr.

Produces a brown rot in logs and slash in dry locations. Common.

Pholiota adiposa (Batsch. ex Fr.) Kummer

Causes a white rot of heartwood in living trees and sapwood and heartwood of dead trees and logs.

Rot common, sporophores rare.

Polyporus abietinus Dicks. ex Fr.

Produces a white rot of sapwood in limbs of dead and down trees. Uncommon.

Polyporus elegans Fr.

Causes a brown rot of sapwood in old logs. Rare.

Polyporus fibrillosus Karst.

Causes a brown rot in dead trees and slash. Common.

Polyporus resinosus Fr.

Causes a white rot of sapwood and heartwood in dead trees and old logs. Uncommon.

Polyporus schweinitzii Fr.

Produces a brown rot in the heartwood of the butts of living trees. One of the more common butt rots of western hemlock.

Common.

Polyporus sulphureus (Bull.) Fr.

Produces a brown rot in the heartwood of living trees. This heartrot occurs extensively in the butt and trunk of trees of western hemlock.

Common.

Poria subacida (Pk.) Sacc.

Causes a white rot in sapwood and heartwood of old snags. Uncommon.

Stereum sanguinolentum (Alb. & Schw. ex Fr.) Fr.

A white rot of sapwood in logs. Common.

Trametes heteromorpha (Fr.) Bres.

Produces a brown rot in logs and slash. Common.

Uraecium holwayi Arth. (*Uredo holwayi* Arth.)

Kills needles of young trees. Some years causes serious defoliation. Common.

TSUGA MERTENSIANA (Bong.) Carr. -- MOUNTAIN HEMLOCK

Fomes pini (Thore ex Fr.) Karst.

Produces a white rot in the heartwood of living trees. Probably the most common heartrot in mountain hemlock in Alaska.

Fomes pinicola (Sw. ex Fr.) Cke.

A brown rot of sapwood and heartwood in dead trees, and logs. Probably occurs as a heartrot in living trees. Common.

Fomes robustus Karst.

Causes a white rot of heartwood and sapwood of living trees. May kill trees by killing cambium. One of the more common heartrots in mountain hemlock.

Polyporus resinosus Schrad. ex Fr.

Causes a white rot of sapwood and heartwood in stumps and slash. Uncommon.

Poria crassa (Karst.) Sacc.

Produces a brown rot of sapwood and heartwood in old logs. Rare.

SUPPLEMENTARY LIST

DUFF -- Rotten wood, moss, and soil.

Cantharellus floccosus Schw.

Breaks down components of duff. Uncommon.

Polyporus cristatus Pers. ex Fr.

On ground at base of living western redcedar trees. Rare.

Polyporus perennis L. ex Fr.

Decay of duff components. Abundant.

EPILOBIUM ANGUSTIFOLIUM L.

Pucciniastrum pustulatum (Pers.) Diet.

Rust on leaves of living plants. Uncommon.

LEDUM PALUSTRE b. s. sp. *groenlandicum* (Retz.) Hulten

Chrysomyxa ledicola (Pk.) Lagh.

Alternate stage of a serious rust on spruces. On leaves of living plants. Causes defoliation. Abundant.

MENZIESIA FERRUGINEA J. E. Sm.

Melasmia menziesii Dearn. & Barth.

Causes a tar spot on leaves of living plants. Common.

PETASITES SAGITTATUS (Banks) Gray

Puccinia poarum Niels.

A rust on leaves of living plants. Abundant.

RIBES BRACTEOSUM Dougl.

Puccinia caricis grossulariata Arth.

A rust on leaves. Common.

RIBES TRISTE Pall.

Puccinia ribis DC.

A rust on leaves. Common.

ROSA ACICULARIS Lindl.

Phragmidium rosae-acicularis Liro
Causes defoliation of living plants. Common.

RUBUS IDAEUS L.

Phragmidium rubi-idaei (DC.) Karst.
Causes withering of leaves on cultivated raspberry bushes. Common.

RUBUS SPECTABILIS Pursh

Nidula candida (Pk.) White
Birds'-nest fungus on dead stems of salmonberry. Common.

Polyporus varius Pers. ex Fr.
Causes a white rot of dead stems. Rare.

CALIFORNIA FOREST AND RANGE EXPERIMENT STATION, FOREST SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE, IN COOPERATION WITH THE UNIVERSITY OF CALIFORNIA; AND CROPS PROTECTION RESEARCH BRANCH, AGRICULTURAL RESEARCH SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE